WL2821

Low noise, High PSRR, High speed, CMOS LDO

Http://www.sh-willsemi.com

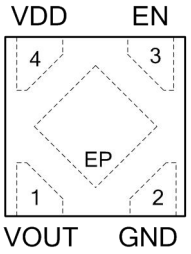
Descriptions

The WL2821 series is a high accuracy, low noise, high speed, low dropout CMOS Linear regulator with high ripple rejection. The devices offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

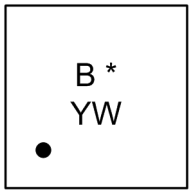
The WL2821 has the fold-back maximum output current which depends on the output voltage. So the current limit functions both as a short circuit protection and as an output current limiter.

The WL2821 regulators are available in DFN1x1-4L Package. Standard products are Pb-free and Halogen-free.

DFN1X1-4L



Pin Configuration (Top View)



B: Device Code
*** : Voltage Code**
Y : Year Code
W: Week Code

For detail marking information, please see page 9.

Marking

Features

- Input voltage : 1.6V~5.5V
- Output range : 0.9V~3.3V
- Output current : 300mA Typ.
- PSRR : 70dB @ 217Hz
- Dropout voltage : 250mV @ I_{OUT}=300mA
- Quiescent current : 50μA Typ.
- Shut-down current : < 1μA
- Recommend capacitor : 1uF

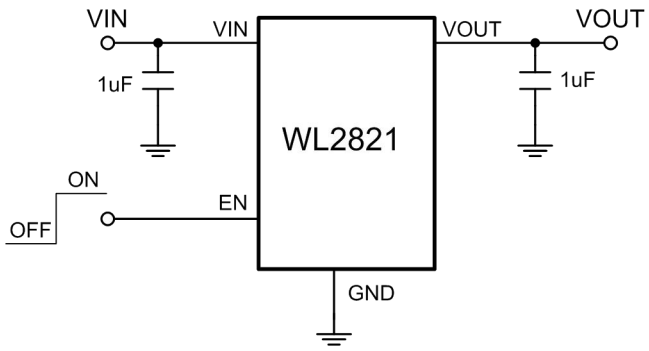
Applications

- MP3/MP4 Players
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable electronics device

Order Information

For detail order information, please see page 9.

Typical Application

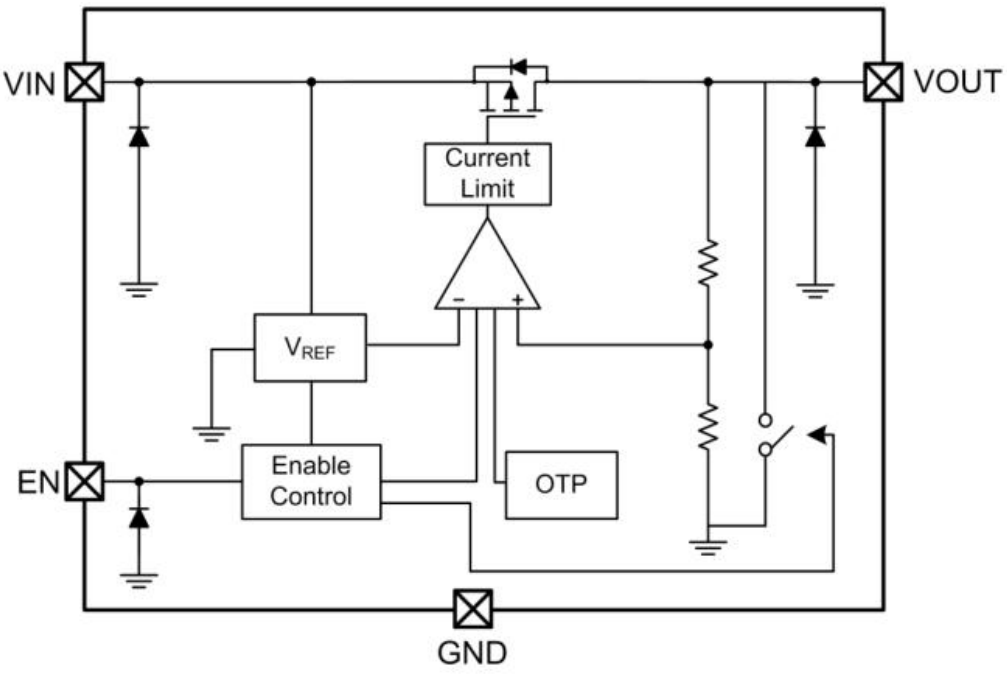


Pin Description

DFN1X1-4L

PIN	Symbol	Description
1	VOUT	Output
2	GND	Ground
3	EN	Enable (Active high)
4	VIN	Input
EP		GND level, this pin must connect to GND.

Block Diagram



Absolute Maximum Ratings

Parameter		Value	Unit
Power Dissipation, P_D@T_A=25°C		400	mW
V_{IN} Range		-0.3～6.5	V
V_{EN} Range		-0.3～V_{IN}	V
V_{OUT} Range		-0.3～V_{IN}	V
I_{OUT}		400	mA
Lead Temperature Range		260	°C
Storage Temperature Range		-55 ~ 150	°C
Operating Junction Temperature Range		150	°C
ESD Ratings	HBM	8000	V
	MM	400	V

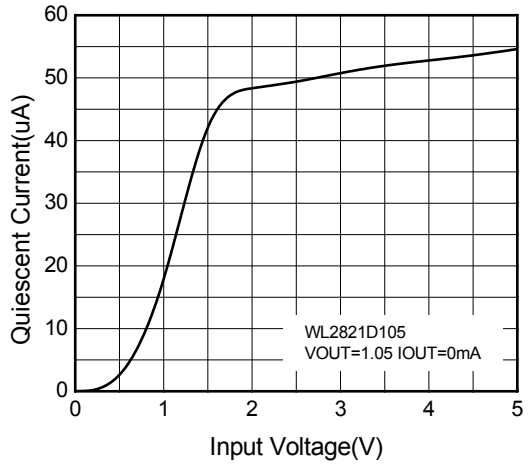
Recommend Operating Ratings

Parameter	Value	Unit
Operating Supply voltage	1.6～5.5	V
Operating Temperature Range	-40～85	°C
Thermal Resistance, $R_{\theta JA}$ (DFN1x1-4L)	250	°C/W

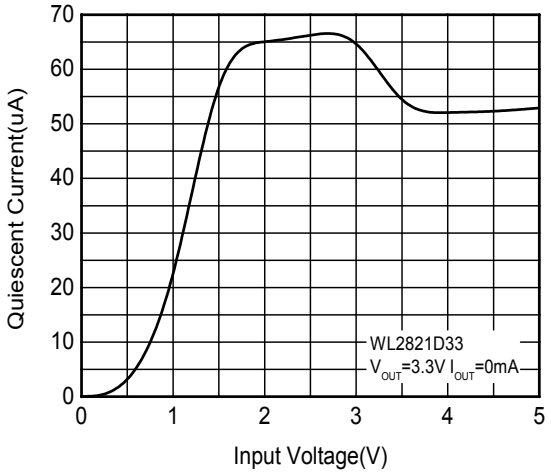
Electronics Characteristics (T_a=25°C, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1uF, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	V_{OUT} ≤1.5V, V_{IN}=2.7V, I_{OUT}=1mA	0.97 V_{OUT}	V_{OUT}	1.03 V_{OUT}	V
		V_{OUT}>1.5V, I_{OUT}=1mA	0.98 V_{OUT}	V_{OUT}	1.02 V_{OUT}	
Current Limit	I_{LIM}	V_{EN}=V_{IN}		450		mA
Dropout Voltage	V_{DROP}	V_{OUT}=3.3V, I_{OUT}=300mA		200	240	mV
		2.5V＜V_{OUT}≤3.0V, I_{OUT}=300mA		230	290	
		2.1V＜V_{OUT}≤2.5V, I_{OUT}=300mA		270	350	
		1.8V＜V_{OUT}≤2.1V, I_{OUT}=300mA		310	420	
		1.5V＜V_{OUT}≤1.8V, I_{OUT}=300mA		370	530	
		1.2V＜V_{OUT}≤1.5V, I_{OUT}=300mA		500	740	
		1.1V＜V_{OUT}≤1.2V, I_{OUT}=300mA		630	800	
		1.0V＜V_{OUT}≤1.1V, I_{OUT}=300mA		750	930	
		V_{OUT}=0.9V, I_{OUT}=300mA		790	1000	
Line Regulation	△V_{LINE}	V_{IN}=2.7~5.5V, I_{OUT}=1mA		0.01	0.1	%/V
Load Regulation	△V_{Load}	V_{OUT}=2.8V , I_{OUT}=1~300mA		10	30	mV
Quiescent Current	I_Q	V_{OUT}=2.8V, I_{OUT}=0		50	70	μA
Short Current	I_{SHORT}	V_{EN}=V_{IN}, V_{OUT} Short to GND		150		mA
Shut-down Current	I_{SHDN}	V_{EN}=0V			1.0	μA
Power Supply Rejection Rate	PSRR	V_{IN}=(V_{OUT}+1V)$_{DC}$+0.5V_{P-P} F=217Hz ,Iout=10mA		70		dB
		V_{IN}=(V_{OUT}+1V)$_{DC}$+0.5V_{P-P} F=10KHz, Iout=10mA		60		
EN logic high voltage	V_{ENH}	V_{IN}=5.5V, I_{OUT}=1mA	1.2			V
EN logic low voltage	V_{ENL}	V_{IN}=5.5V, V_{OUT}=0V			0.4	V
EN Input Current	I_{EN}	V_{EN}= 0 to 5.5V			1.0	μA
Output Noise Voltage	e_{NO}	10Hz to 100KHz, C_{OUT}=1μF		100		μV_{RMS}
Thermal shutdown threshold	T_{SD}			160		°C
Thermal shutdown hysteresis	△ T_{SD}			35		°C
Auto-discharge Nch Tr. ON Resistance	R_{LOW}	V_{IN}=4.0V，V_{CE}=0V		100		Ω

Typical characteristics (Ta=25°C, V_{IN}=2.5V, V_{OUT} = 1.05V C_{IN}=C_{OUT}=1uF, unless otherwise noted)



Quiescent current vs. Supply voltage



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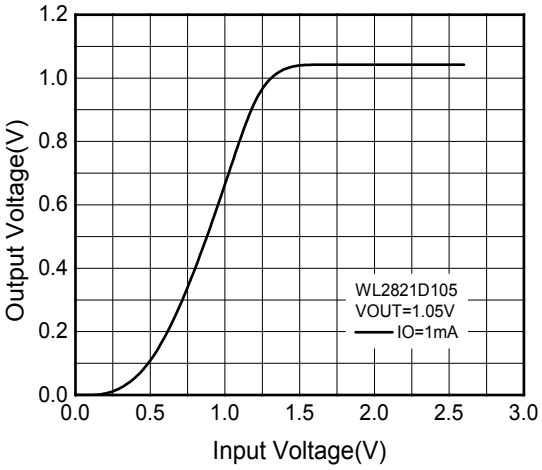
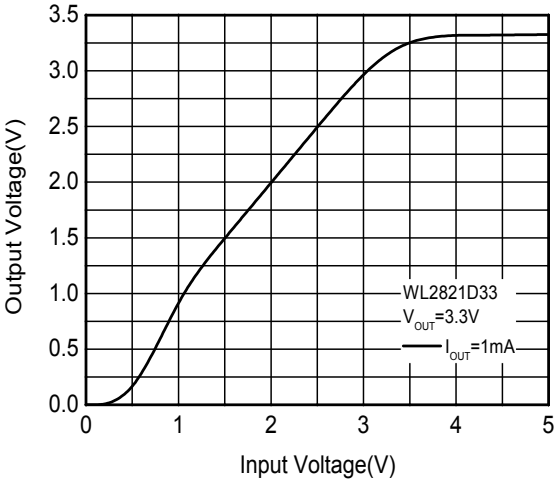
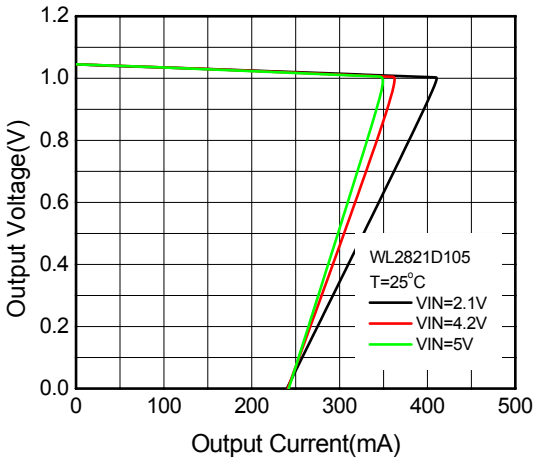


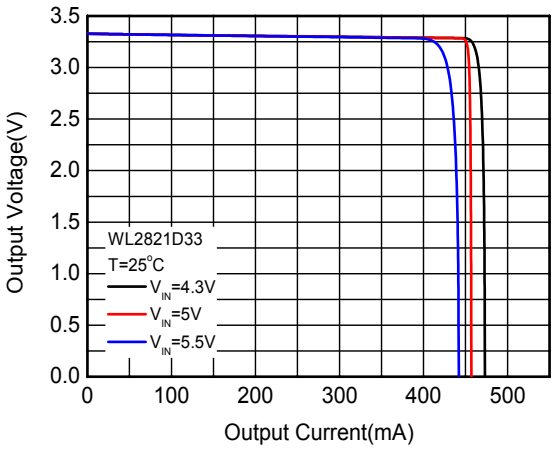
Output voltage vs. Supply voltage



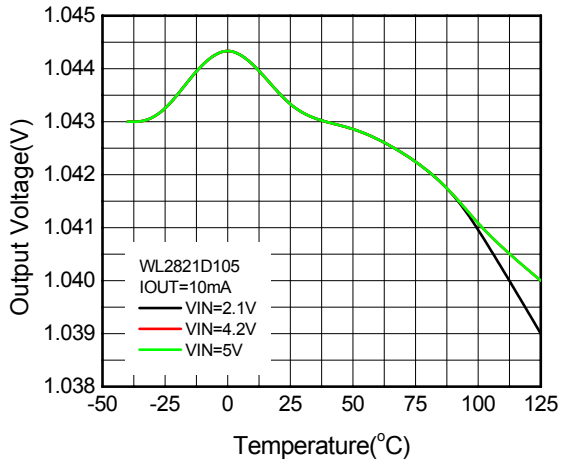
Output voltage vs. Supply voltage



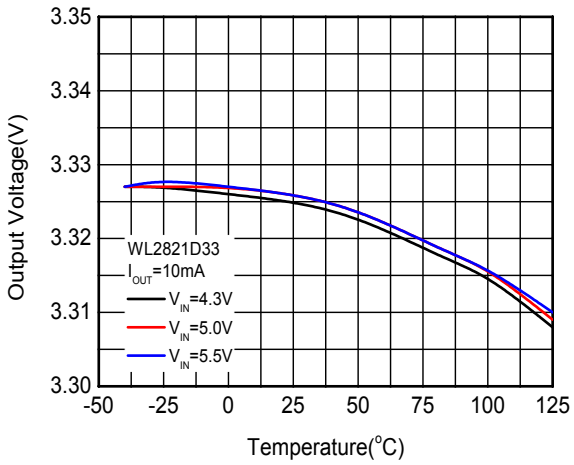
Output voltage vs. Output current



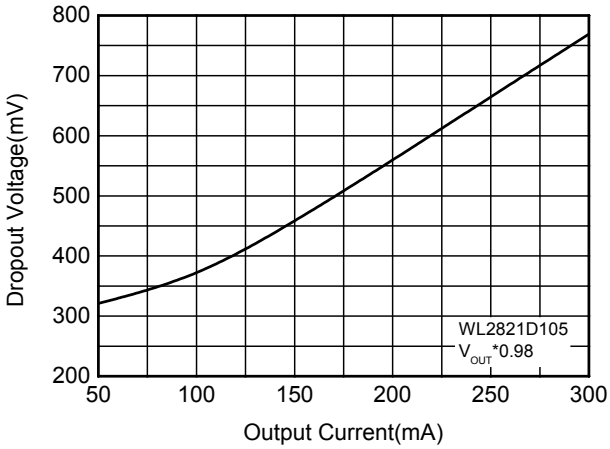
Output voltage vs. Output current



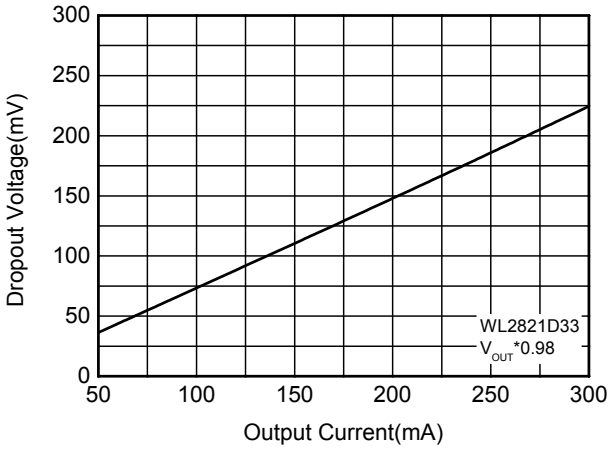
Output Voltage vs. Temperature



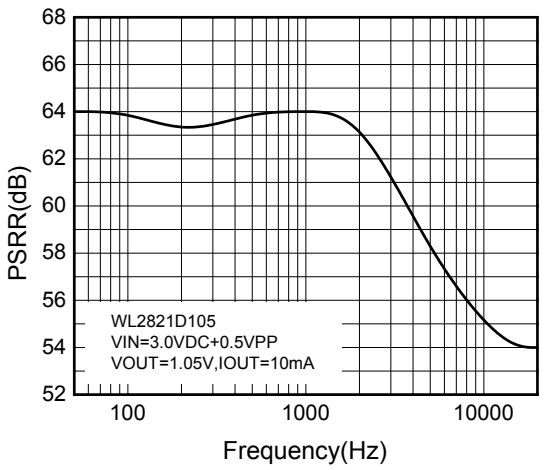
Output Voltage vs. Temperature



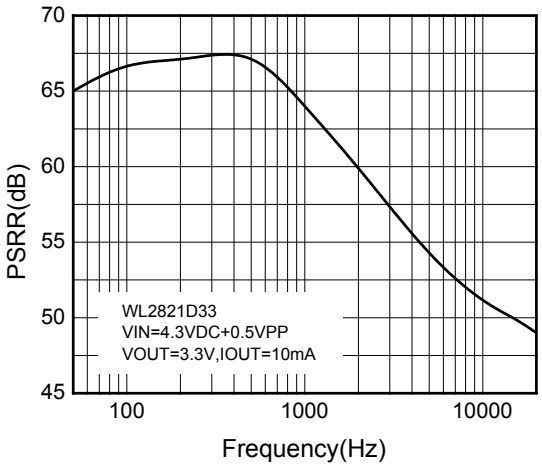
Dropout Voltage vs. Output Current



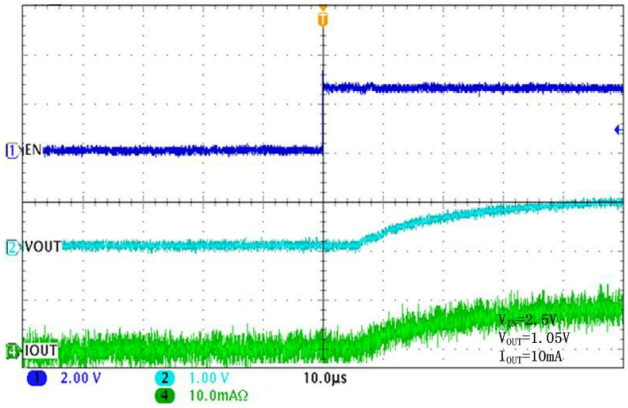
Dropout Voltage vs. Output Current



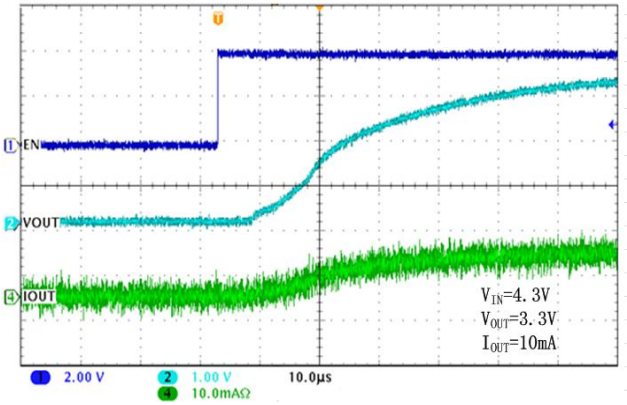
PSRR



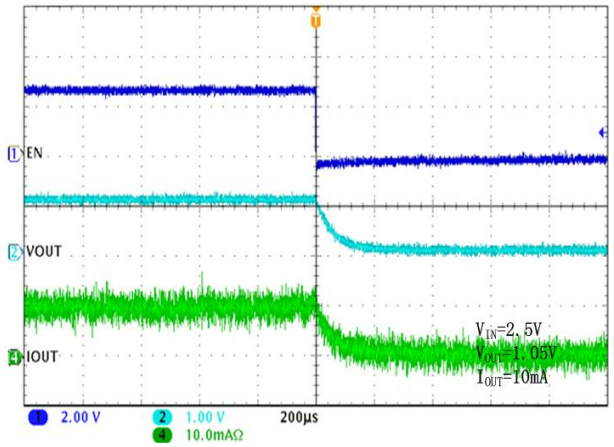
PSRR



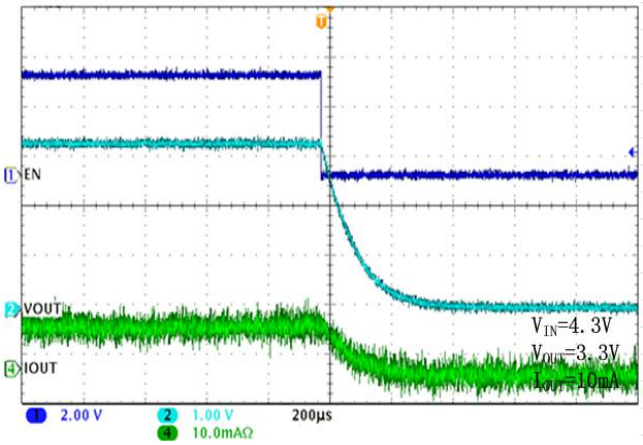
Soft Start form EN



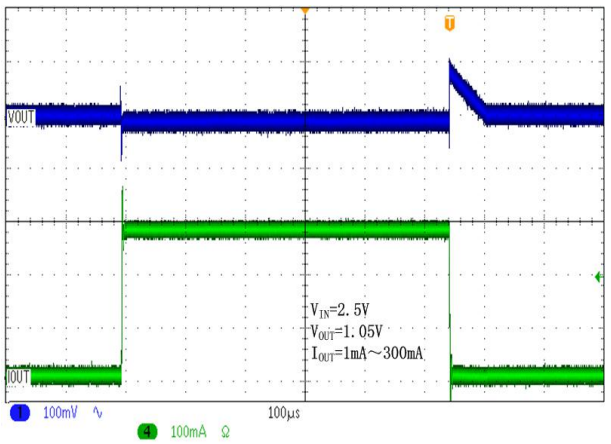
Soft Start form EN



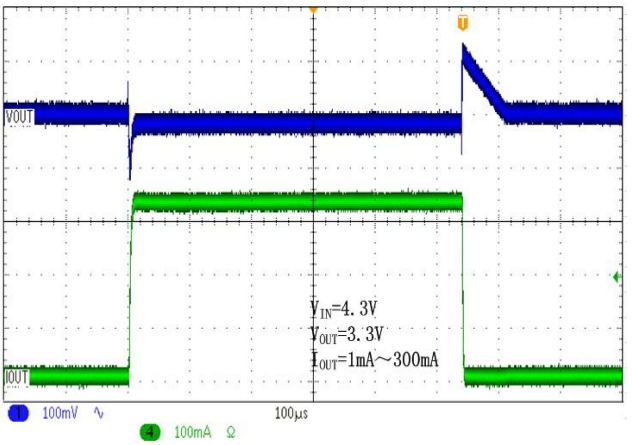
EN Shutdown



EN Shutdown



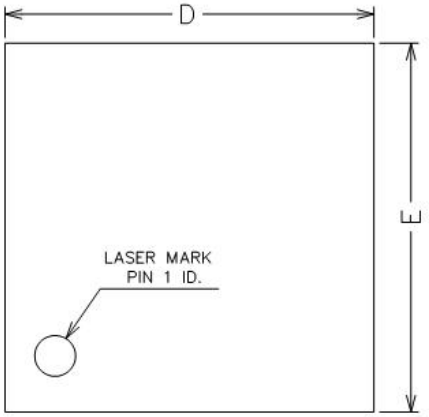
Load Step



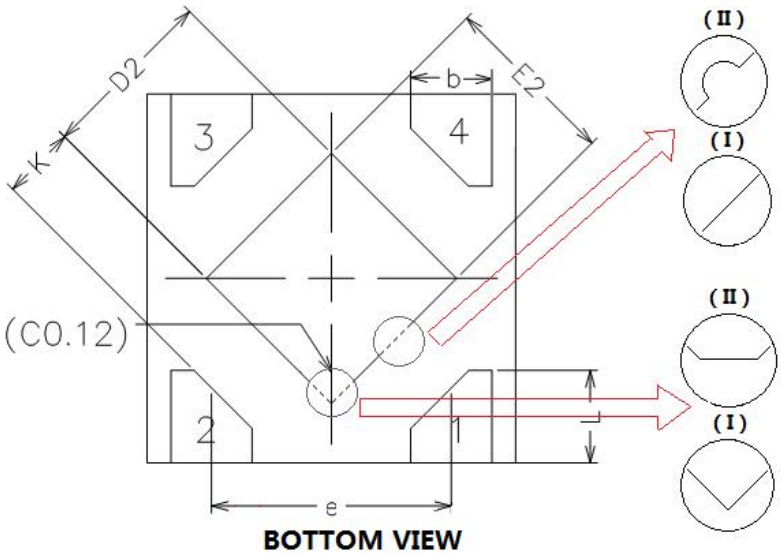
Load Step

Packaging Information

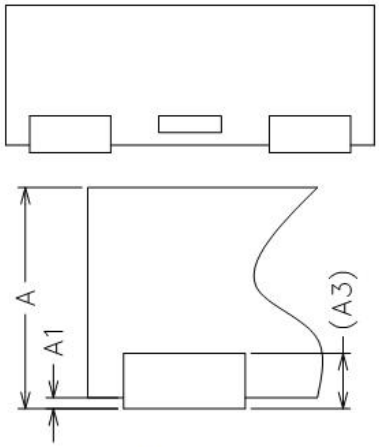
DFN1x1-4L



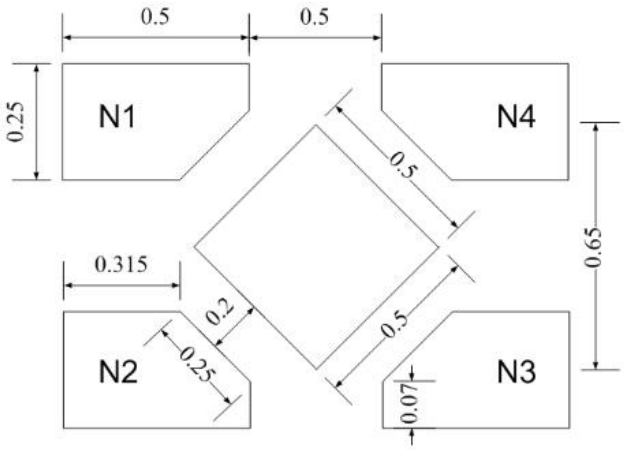
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN(unit:mm)

Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.34	0.37	0.40
A1	0.00	0.02	0.105
A3		0.10 REF	
b	0.17	0.22	0.27
D	0.95	1.00	1.05
E	0.95	1.00	1.05
D2	0.43	0.48	0.53
E2	0.43	0.48	0.53
L	0.20	0.25	0.30
e	0.60	0.65	0.70
K	0.15	-	-

ORDER INFORMATION

Ordering No.	Vout (V)	Package	Operating Temperature	Marking	Shipping
WL2821D105-4/TR	1.05	DFN1x1-4L	-40~+85°C	BC YW	Tape and Reel, 10000
WL2821D12-4/TR	1.2	DFN1x1-4L	-40~+85°C	BE YW	Tape and Reel, 10000
WL2821D18-4/TR	1.8	DFN1x1-4L	-40~+85°C	BH YW	Tape and Reel, 10000
WL2821D20-4/TR	2.0	DFN1x1-4L	-40~+85°C	BI YW	Tape and Reel, 10000
WL2821D33-4/TR	3.3	DFN1x1-4L	-40~+85°C	BN YW	Tape and Reel, 10000

Marking:

B: Device Code

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